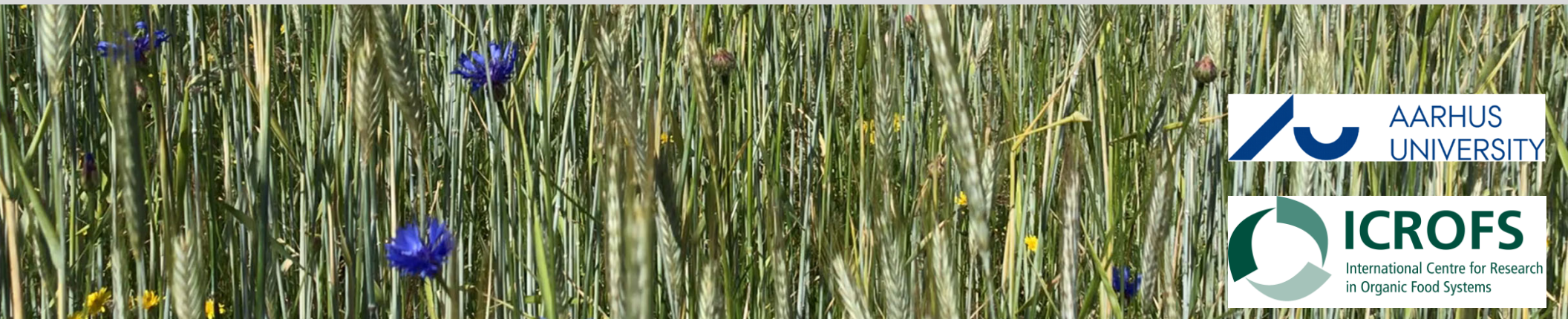




# Agroecology – the fundament for the development of organic farming?

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& Tommy Dalgaard (Dept. of Agroecology, Aarhus University)





# International Centre for Research in Organic Food Systems

## **ICROFS**

Established by the Ministry of Environment and Food in Denmark

The purpose of ICROFS' activities is to further develop a market-driven and competitive Danish organic sector through advancement and dissemination of research based knowledge







# International Centre for Research in Organic Food Systems

## Research program coordination

- Organic RDD (DK)
- ERA-net CORE Organic (EU)  
24 projects with Swedish participation

GreenResilient  
ORGANICSDAIRYHEALTH  
SusOrgPlus POWER ICOPP  
FreeBirds ProYoungStock PrOPara  
EcoBerries FertiCrop EcoOrchard  
MIX-ENABLE HealthyHens  
ProRefine SafeOrganic  
SUSORGANIC  
PRODIVA

## IAASTD (2009) – Agriculture at a Crossroads

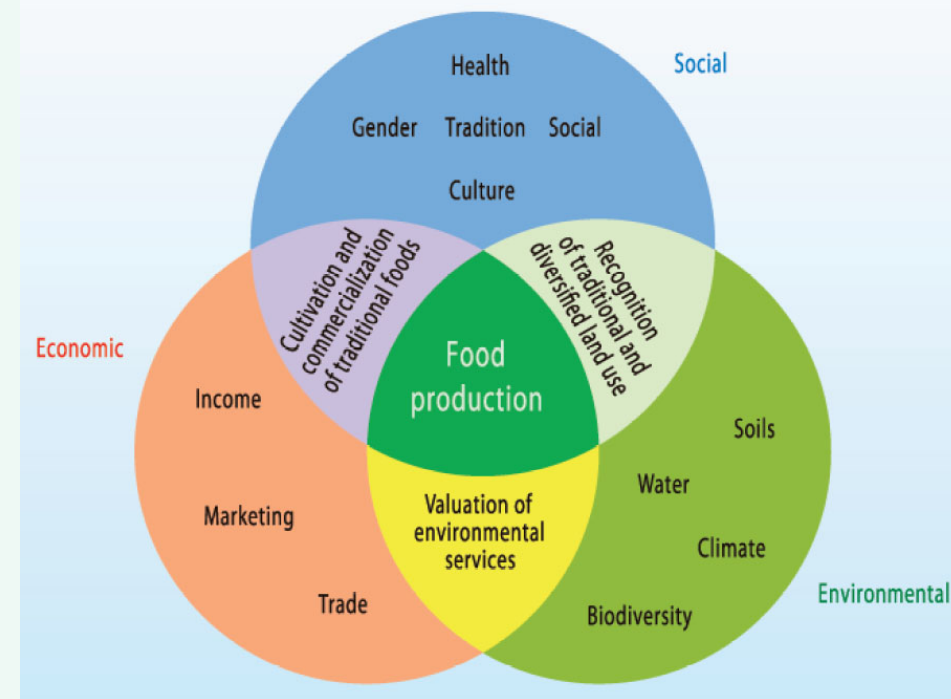
- Ecological agricultural systems
- **Organic Farming**
- Conventional LEISA

**Agriculture is multifunctional!**

**Agroecology** as a science, a movement and a practice. A review (Wezel et al, 2009)

**Agroecological practices** for sustainable agriculture. A review (Wezel et al, 2013)

A key recommendation: **Agroecology** has enormous potential for sustainable food production – states should support the adoption of **agroecological practices** (UN Report of the Special Rapporteur on the right to food, Olivier De Schutter, 2014)



# AGROECOLOGY - Global

The **science** and **practice** of applying ecological concepts and principles to the study, design and management of the ecological interactions within agricultural systems (e.g. relations between and among biotic and abiotic elements). The whole-systems approach to agriculture and food systems development is based on a wide variety of technologies, practices and innovations including local and traditional knowledge as well as modern science.  
(FAO, 2009)

FAO's **10 elements of agroecology**: diversity, co-creation and sharing of knowledge, synergies, efficiency recycling resilience human and social values culture and food tradition, responsible governance, circular and solidarity economy.  
(FAO, 2019)



# AGROECOLOGY - EU

In a nutshell, agroecology, defined by the FAO through ten elements, means **understanding ecosystems** better and **using this knowledge to design** more sustainable farming practices and systems.

Agroecology can be the basis of farming systems which are more resilient and more closely connected to society, and which would deliver sufficient, safe, nutritious and affordable food, while respecting planetary boundaries and rewarding farmers better. (EU, from *'European R&I partnership on agroecology living labs and research infrastructures'*)

## **The short 'science' version**

'Agroecology is the study of interaction between plants, soil, animals, environment, climate and people'

(Department of Agroecology, Aarhus University)

# Organic Agriculture

Organic agriculture is a production system that sustains the health of soils, ecosystems, and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. (IFOAM 1972)

The Principles of Organic Agriculture (IFOAM, 2005).

## Organic Agriculture

is based on: **The principle of health**

**The principle of ecology**

**The principle of fairness**

**The principle of care**

Each principle is articulated through an explanation. The principle

Organic 3.0 – for truly sustainable farming and consumption.  
The vision and strategic roadmap for development of organic farming. (IFOAM 2017)

# *Bridging Agroecology and Organic*



## **Incorporating Agroecology Into Organic Research – An Ongoing Challenge (Urs Niggli, FiBL, 2015):**

Lesson learnt from agroecological farm practices - organic agriculture has to implement more rigorously a comprehensive culture of **social, ecological** and **technological** innovation

## **IFOAM - EU GROUP: Position paper on agroecology. Organic and agroecology: working to transform our food systems (December 2019)**

- Agroecological and organic practices – looking in the same direction
- Transforming the European and global food system to a system that is truly sustainable needs both the agroecological and the organic approaches – which are largely the same!
- Organic farming should be strengthened as a practical and certified approach of agroecological farming.

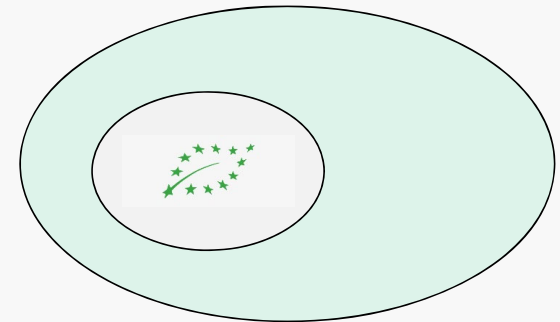


## Organic sector = agroecological system

The organic sector is the most well-developed example of an agroecological system with

- a defined approach,
- a legislation,
- a system to connect the producer with the market, and
- a well-established research and innovation environment.

**Organic sector = a laboratory for development of agroecological systems**



# Social innovation Multi-actor approach

**ICROFS Research Strategy (2019 – 2021):**  
developed in a consultative process with  
stakeholders from the sector.

Calls for practice-oriented solutions and  
research carried out in close collaboration  
with farmers, companies, authorities, and  
consumers.

Focus areas include the full value  
chain from producers to consumers.

Contribution of OA to public goods.



# Ecological R&D



The organic laboratory -  
Example:

**Catch/cover crops for  
plant nutrition - enriching  
soils with N, and  
maintaining the nutrients  
in the soil.**

(Organic RDD: NutHY, RowCrop,  
MultiPlant, HighCrop, RoCo)  
(CORE Organic: InterVeg,  
TILMAN-ORG, FertiCrop, SoilVeg)





# Ecological R&D

The organic laboratory -  
Example:

## Animal health & welfare

- Getting animal health and welfare on the agenda
- Reduced use of antibiotics

(Organic RDD: ECOVIT, KALVvedKO)  
(CORE Organic: ANIPLAN,  
HealthyHens, ProPig, CrazyDaiSy,  
POWER, ProYoungStock, FreeBirds)

KRITERIER FOR GØDS	Standard	♥	♥♥	♥♥♥
Ingen hulekupering		X	X	X
Halm som rodmateriale		X	X Tilførsel på gulv	X Tilførsel på gulv
Halm som røddyringsmateriale		X	X	X
Løsgående søer løbe- og hvileområde		X	X	X
Løsgående søer i løsestald		X	X	X
Max 8 timers transport		X	X	X
Arealkrav i forhold til standardproduktion		X	+30%	+ca. 100%
Fravæning tidligst 28 dage			X	X
Halm i høje				X
Fartig på frihold				X
Udseende fravænmøde				X
Udseende slagtervin				X



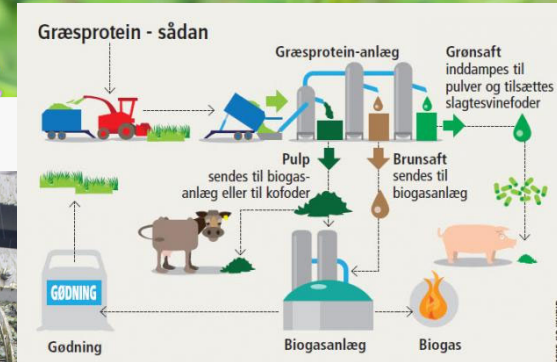


# Ecological & Technological R&D

The organic laboratory -  
Example:

**Locally produced green  
protein for pigs and  
poultry**

(Organic RDD: SuperGrassPork,  
OrganoFinery)  
(CORE Organic: ICOPP, ProRefine)



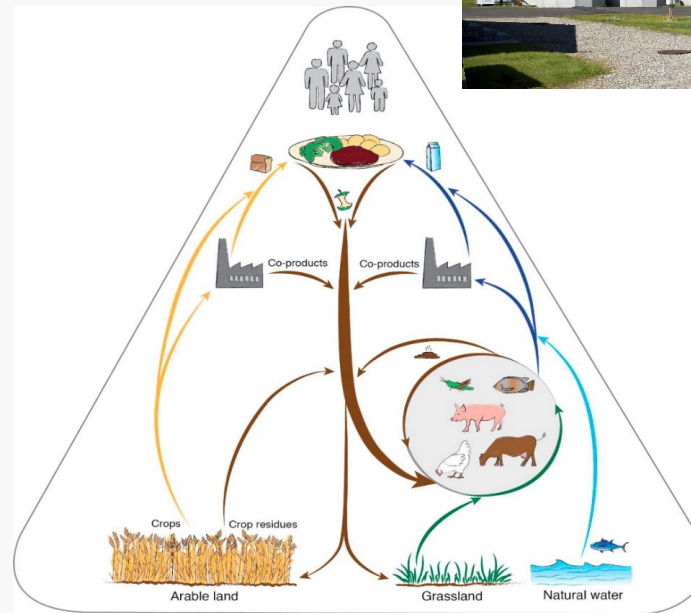
# Sustainable Development Strategic focus areas 2019-2021

- CIRCULAR BIO-ECONOMY
- CLIMATE AND ENVIRONMENT
- BIODIVERSITY
- HEALTH AND WELFARE
- THE FUTURE ORGANIC CONSUMER
- ORGANIC FARMING – FOR A LIVING



# Circular bioeconomy - returning nutrients to the the primary production

- Technology development
- Systems development
- Social development
- Development of standards and regulation?



*H.H.E. Van Zanten, et al. 2019*



# Organic agriculture in 2030

- EU: 25% of agricultural land under organic farming (Green Deal, Farm to fork strategy)
- SE: 30% of agricultural land under organic farming (National Food Strategy – Action Plan)
- DK: double the organic area, export and consumption (political agreement – action plan under preparation)

To achieve the 2030 goals **investments** are needed for **research, development and innovation** to address the specific challenges and requirements of **the organic sector**





Thank you for your  
attention

